

withdrawn claim 11, and added new claims 12-16. Applicants respectfully submit that the present application is in condition for allowance based on the discussion that follows.

In complete compliance with the Restriction Requirement, by this Amendment, Applicant withdraws claim 11 drawn to a non-elected invention.

In accordance with the Examiner's request, Applicants have carefully reviewed the specification and by this Amendment made minor spelling changes making the specification conform with more conventional American English language.

Claims 1-10 were rejected under 35 U.S.C. § 112, second paragraph. In particular, the Examiner noted that the preamble of claim 1 recites a process but that the claim does not recite positive steps. By this Amendment, Applicants have amended claim 1 to incorporate the subject matter of original claims 3 and 4 and thereby claim 1 (currently amended) recites steps, thus obviating the rejection to claim 1 under 35 U.S.C. § 112, second paragraph. Further, claims 6 and 8-10 have been amended to be more consistent with conventional U.S. claim form.

Original claim 1 was rejected under 35 U.S.C. § 102(e) as being anticipated by GB 590,439 (hereinafter "GB '439") or Schneider U.S. Patent No. 2,895,886. In addition, original claims 1-6, 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over GB '439 or Schneider in view of EP 0 933 107 and Peter U.S. Patent No. 3,856,632.

The Examiner specifically identified alleged elements which the prior art anticipates or makes obvious in claims 1, 2, 6, 7 and 8. However, the Examiner fails to identify any corresponding method or process in the cited art teaching let alone

suggesting the subject matter of claims 3 and 4. Therefore, Applicants conclude that the subject matter of claims 3 and 4 are not anticipated or made obvious by the cited art of record.

Moreover, Applicants submit that the prior art does not teach or suggest the subject matter of claims 3 and 4. Accordingly, without addressing the merits of the prior art rejections, and in order to move this case to allowance, by this Amendment, Applicants have amended claim 1 to include the subject matter of claims 3 and 4 as claim 1 (currently amended).

As noted by the absence of the Examiner alleging any process or method taught in the art with regard to the subject matter of original claims 3 and 4, the prior art of record fails to teach or suggest the subject matter of claim 1 (currently amended). Furthermore, Applicants submit that the claimed invention recites elements not taught or suggested by the prior art of record.

Turning now specifically to the cited prior art, GB '439 is directed to introducing a vapor into a distillation column (see GB '439, page 3, lines 84-87), "passing the hydrogen peroxide vapor from the separator to a fractionating column where it is subjected to fractional distillation", whereas, in claim 1 (currently amended), a diluted solution is fed into the distillation column.

In addition, GB '439 clearly teaches a climbing film evaporator is used (GB '439, page 3, lines 75-76 and 99), whereas in claim 1 (currently amended), a "falling" film evaporator is used.

Further, in GB '439, the distillation column is not assembled on top of the evaporator (see GB '439, Figures 1 and 2) as is recited in claims 1 (currently amended).

With regard to Schneider, Schneider fails to teach or suggest a process for concentrating a diluted solution which comprises steps (a)-(e) as are currently recited in claim 1 (currently amended).

Since the prior art of record fails to teach or suggest the claimed process and the Examiner has failed to identify any process or method in the cited art which teaches or suggests the claimed method, Applicants respectfully submit that claim 1 (currently amended) presents subject matter not anticipated or made obvious by the prior art of record. Therefore, Applicants respectfully request that the Examiner withdraw the rejection to claim 1 under 35 U.S.C. §§ 102(e) and 103(a).

Further, Applicants respectfully submit that dependent claims 6 and 8-10 which depend from claim 1 are not anticipated by or made obvious from the prior art of record for at least the same reason as claim 1.

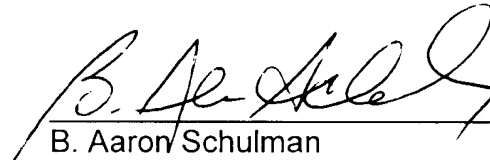
In addition, by this Amendment, Applicants have added new claims 12-16. Subject matter basis for these added claims can be found in the specification as filed. In particular, subject matter basis is found as follows: new claim 12, specification, page 3, line 16; new claim 13, corresponding to original claim 2; new claim 14, specification, page 3, lines 12-14; claim 15, specification, page 8, lines 20-22; and claim 16, specification, page 5, lines 24-26. Therefore, added claims 12-16 do not present new matter.

In view of the foregoing, Applicants respectfully submit that the present application is now in condition for immediate allowance.

Respectfully submitted,

LARSON & TAYLOR, PLC

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B. Aaron Schulman
Registration No. 31877

1199 North Fairfax Street, Suite 900
Alexandria, Virginia 22314
(703) 739-4900

ATTACHMENT A

Marked Up Replacement Paragraphs

At the following locations, a marked up copy of the replaced paragraph is provided.

Page 1, line 31 through Page 2, line 8:

GB 668874 relates to a process for the manufacture of high concentrated hydrogen peroxide solutions by distillation of diluted solutions, where the high boiling fraction resulting from the distillation is ~~vaporised~~ vaporized in two superposed pans. The drawback of this process is that it operates with at least two horizontal layers of liquid. The pressure drop induced by these layers increases the boiling temperature of the liquid, thereby increasing the probability of explosive decomposition. In addition, these horizontal liquid layers result in liquid build-ups in the area where the concentration of the solution is the highest. Another drawback of the process according to GB 668874 is the high heat consumption of the ~~vaporiser~~ vaporizer.

Page 3, lines 30-36:

In another advantageous embodiment of the present invention, the evaporator is a falling film evaporator. The falling film evaporator according to this embodiment is generally a long tube vertical evaporator in which the concentrated solution leaving the bottom of the distillation column is fed continuously to the top of the tube(s) and flows down the walls as a film. The number and the dimension of the tubes are such that the hold-up of hydrogen peroxide in the evaporator is ~~minimised~~ minimized.

Page 4, line 35 through Page 5, line 6:

The distillation is mostly carried out under reduced pressure in order to limit the boiling temperature of the high boiling liquid fraction which has to be ~~vaporised~~ vaporized. In general, the pressure is lower than 40 Torr. A maximum pressure of 10 Torr during the distillation is well suited. The pressure during the distillation is generally higher than about 5 Torr. A minimal pressure of 3 Torr is mostly observed during the distillation. Usually, the temperature at the bottom of the distillation column is less than 50°C. A bottom temperature of less than 40°C is more suitable. Generally, the bottom temperature will be higher than 0°C.

Page 5, lines 7-13:

As explained above, in the falling film evaporator according to the invention, the number and the dimension of the tubes are such that the build-up of liquid in the evaporator is ~~minimised~~ minimized. Typically, less than 2% of the hourly production of hydrogen peroxide is held up in the evaporator. Preferably, less than 1% of the hourly production is held up in the evaporator. Safety is increased when less than 0.5% of the hourly production of concentrated liquid is held up in the falling film evaporator.

Page 5, lines 21-26:

In the falling film evaporator according to the invention, the high boiling liquid fraction of the solution flows down by gravity, and the flow of the heating medium and the flow of vapor arising from the solution may either be flowing down or up. Preferably, circulation of hot water is used as heating medium and the hot water, the high boiling

liquid fraction of the solution and the ~~vapour~~ vapor arising from it are flowing down concurrently.

Page 7, lines 4-8:

The top ~~vapours~~ vapors are sent to a condenser (6) through a pipe (5). The resulting liquid and ~~vapours~~ vapors are sent to a ~~liquid/vapour~~ liquid/vapor separator (8) through a pipe (7). Part of the recovered liquid is refluxed to the top of the column (1) through a pipe (9).

Page 7, lines 20-25:

The concentrated solution obtained at the bottom of the falling film evaporator (11) is transferred via a pipe (12) to a ~~vapour~~ vapor/liquid separator (13). The ~~vapours~~ vapors are sent back to the bottom of the column via a pipe (14). The final liquid product is continuously transferred via a pipe (15) to a falling film cooler (16) which allows an optimal heat transfer coefficient and a minimum liquid hold-up.

ATTACHMENT B

Marked Up Replacement Claims

Following herewith is a complete listing of all claims.

1. (Currently Amended)–~~Process~~ A process for the manufacture of a ~~concentrated~~ concentration of a diluted solution ~~by distillation and evaporation of a dilute solution, in which the distillation and the evaporation are carried out in a distillation column and an evaporator which~~ containing a solvent, comprising a distillation step in a distillation column followed by an evaporation step in a falling film evaporator, in which the distillation column and the falling film evaporator constitute two distinct pieces of equipment which are easy to dismantle and to transport, separated by a distributor, and in which the distillation column is assembled on top of the falling film evaporator, said process comprising the following steps:

- (a) feeding the diluted solution at least at one point along the distillation column;
- (b) distilling the diluted solution in the distillation column so as to obtain a low boiling vapor fraction of the solution at the top of the distillation column and a high boiling liquid fraction of the solution at the bottom of the distillation column;
- (c) transferring, through the distributor, the high boiling liquid fraction of the solution from the bottom of the distillation column into the falling film evaporator;
- (d) concentrating the high boiling liquid fraction of the solution in the falling film evaporator by evaporation of at least part of the solvent; and

(e) collecting the concentrated solution at the bottom of the falling film evaporator.

Claims 2-5 (Canceled)

6. (Currently Amended)—~~Process~~ The process according to claim 1, wherein the distillation is carried out under a maximum pressure of 10 Torr.

Claim 7 (Canceled)

8. (Currently Amended)—~~Process~~ The process according to claim-4 1, ~~wherein~~ in which after the step (e), the concentrated solution leaving the falling film evaporator is transferred through a distributor into a cooler where it is cooled.

9. (Currently Amended)—~~Process~~ The process according to claim 1, ~~wherein~~ in which the concentrated solution is a concentrated aqueous hydrogen peroxide solution.

10. (Currently Amended)—~~Process~~ The process according to claim 9, ~~wherein~~ in which the concentrated ~~aqueous hydrogen peroxide~~ solution leaving the falling film evaporator contains at least 90% w/w hydrogen peroxide.

Claim 11 (Withdrawn)

12. (New) The process according to claim 1, in which the axes of the distillation column and the falling film evaporator are aligned.

13. (New) The process according to claim 1, in which the distributor has a cross-sectional area at its narrowest point which is smaller than the cross-sectional area of the distillation column.

14. (New) The process according to claim 1, in which the distillation column and the falling film evaporator are assembled in a way that allows the high boiling liquid fraction to flow from the distillation column to the falling film evaporator through the distributor under the action of gravity alone.

15. (New) The process according to claim 1, in which the falling film evaporator consists of a single tube surrounded by a jacket and hot water is circulating in the jacket to heat the tube.

16. (New) The process according to claim 15, in which the hot water in the jacket and the high boiling liquid fraction in the tube are flowing down concurrently.